

REMARKS

In the Office Action dated April 19, 2007, claims 1, 4-6, 9, 11 and 12 were rejected under 35 U.S.C. §102(b) as being anticipated by Dumoulin et al. Claims 2 and 3 were rejected under 35 U.S.C. §103(a) as being unpatentable over Dumoulin et al in view of Applicants' admitted prior art.

Applicants note with appreciation the interview courteously afforded the undersigned representative of the Applicants on July 9, 2007, at which the Examiner's Supervisor, Mr. Brian Casler, also was present. The above rejections were discussed at the interview, and it was agreed that amending the independent claims of the application in the manner set forth herein would overcome the rejections based on Dumoulin et al. At the interview, however, the Examiner stated that making these changes would raise a new issue requiring further searching or consideration, and therefore such changes, if made, would have to be presented in an RCE. The present RCE therefore has been filed to permit entry and consideration of these claim amendments.

As discussed at the interview, the Dumoulin et al reference is an example of the conventional approach to acquiring and displaying magnetic resonance images that are intended to show a moving region, such as blood flow, surrounded by "stationary" tissue. The Dumoulin et al reference is an example of the conventional thinking that the data for the surrounding tissue can be acquired and displayed as if the surrounding tissue truly is stationary. Therefore, in the Dumoulin et al reference, a "snapshot" at a given time of the surrounding tissue is obtained, and this snapshot is then displayed together with the information representing the moving tissue, i.e. the blood flow.

The present inventors have recognized that in certain instances, such as cardiac imaging, the surrounding tissue, although not moving in the same sense as blood, nevertheless is not truly stationary, due to heart movement in the cardiac cycle.

Therefore in the subject matter disclosed and claimed in the present application, rather than obtaining and displaying a "snapshot" of the surrounding tissue, data are acquired that represent the non-stationary surrounding tissue in an anatomical image series. An anatomical image series necessarily encompasses multiple images of a region of a subject that are obtained over time in succession. The respective images in the image series, therefore, show the non-stationary tissue in successive, different positions. In accordance with the present invention, this anatomical image series is acquired quasi-simultaneously with a speed-resolved image series of the moving tissue in the selected region, and the anatomical series and the speed-resolved image series are generated and displayed with each image in the speed-resolved image series being integrated in the image of the anatomical image series that corresponds accurately in time to the image in the speed-resolved image series. Therefore, rather than displaying the speed-resolved image series with a static background, as is conventional and is exemplified by the Dumoulin et al reference, in accordance with the present invention the speed-resolved image series is shown with a background that is not assumed to be static, but instead accurately represents the movement of the non-stationary surrounding tissue that occurs over time.

Numerous locations in the Dumoulin et al reference make clear that only the aforementioned "snapshot" of the stationary tissue is obtained, this being consistent

with the assumption in the Dumoulin et al reference that this tissue is truly “stationary.” Although there is no discussion on this point in the Dumoulin et al reference, it must be assumed that Dumoulin et al know that in the case of cardiac tissue, for example, the assumption that the surrounding tissue is stationary is not correct. Nevertheless, Dumoulin et al apparently are willing to accept the inaccuracies that occur under such circumstances.

In the paragraph beginning at page 2, line 46 in Dumoulin et al, it is stated that “a NMR image” (i.e. one NMR image) of stationary tissue is obtained in a sample volume that also contains a moving fluid. Similar statements are present in Dumoulin et al in the paragraph beginning at page 7, line 49, wherein more details are provided as to how the data representing the moving tissue and the stationary tissue are acquired. Consistent statements are also present in Dumoulin et al in the paragraph beginning at page 8, line 15.

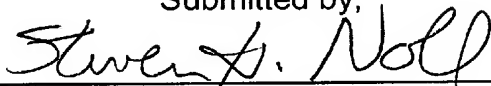
Because there is no disclosure in the Dumoulin et al reference to obtain an anatomical series of the so-called stationary tissue in the region of interest, there is no teaching or suggestion in the Dumoulin et al reference to display such an image *series* in a time-corresponding manner with a speed-resolved image series of the moving region, as disclosed and claimed in the present application.

Each of independent claims 1, 11 and 12 has been amended herein consistent with the agreements reached at the interview. Editorial amendments have been made in dependent claims 2, 3, 7 and 8 that are consistent with the changes made to independent claim 1.

All claims of the application are submitted to be patentable over the teachings of the Dumoulin et al reference, taken alone or in combination with the admitted prior

art identified by the Examiner. Early reconsideration of the application is respectfully requested.

Submitted by,



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